



Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

DEPARTMENT OF AGRICULTURE.

SPECIAL REPORT—No. 4.

CULTIVATION

OF

THE FIG,

AND THE

METHOD OF PREPARING THE FRUIT FOR COMMERCE;

ALSO,

REPORT

ON THE

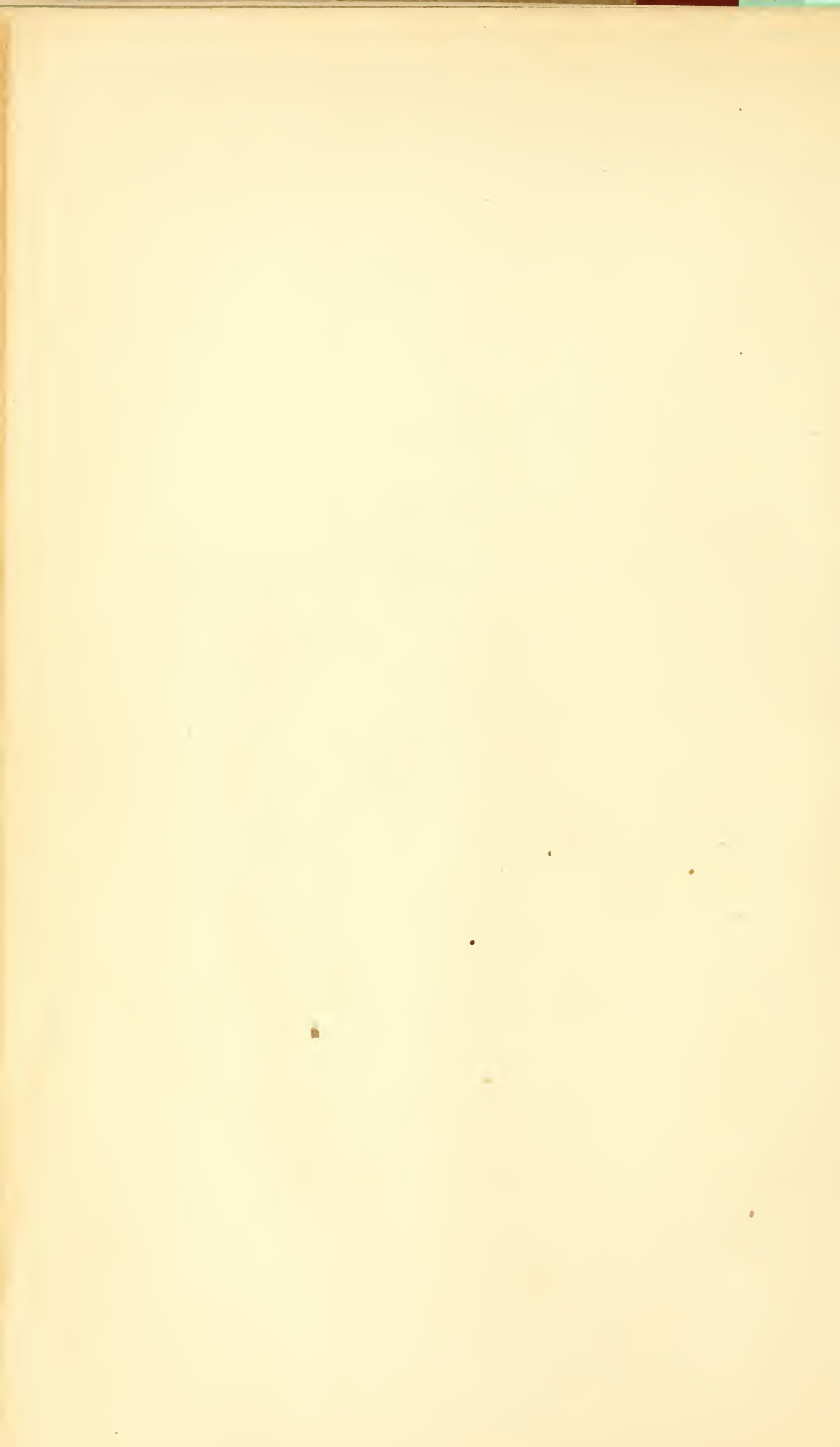
IMPORTANCE OF THE CULTIVATION

OF THE

DATE PALM.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1878.



THE FIG.

The climate of the Southern and Middle States, and a portion of the Pacific coast, is well adapted to the growth of the Fig. The fruit of this tree is so great a luxury, and so useful in many ways, that there is no reason that it should not become a very considerable article of commerce to the people of these States, and thus add to the wealth of the whole country.

A writer in the "Treasury of Botany" gives a very interesting description of the *Ficus carica*, or the Fig of the garden. The name *Ficus*, applied to this very anciently known fruit, is most probably derived from *Feg*, its Hebrew name; that of *carica* is from *Caria*, in Asia Minor, where fine varieties of it have long existed. According to various authors, it is a native of Western Asia, Northern Africa, and the South of Europe, including Greece and Italy. It is certainly indigineous to Asia Minor; but it may have been thence introduced and naturalized in the islands of the Mediterranean and the countries near its shores, both in Europe and Africa.

The fig is a deciduous tree (one whose leaves fall in autumn), and grows 15 to 20 or even 30 feet high, in favorable climates. The alternate leaves are cordate or heart-shaped, more or less deeply, three to five lobed, and rough.

The fruit is generally shortly turbinate, or shaped like a top or cone inverted, but some varieties are of an elongated pear shape; the skin soft, with shallow longitudinal furrows; the color yellowish-white, greenish-brown, purplish-brown, violet, or dark purple. It consists of a hollow, fleshy receptacle, with an orifice in the top, which is surrounded and nearly closed by a number of imbricated scales, or scales lying over each other like tiles, as many as two hundred, according to Duhamel. The flowers, unlike those of most fruit-trees, make no outward appearance, but are concealed within the fig on its internal surface. They are male and female; the former situated near the orifice, the latter in that part of the concavity next the stalk. On cutting open a fig when it has attained little more than one-third its size, the flowers will be seen in full development, and, provided the stamens are perfect, fertilization takes place at that stage of growth; but it often happens that the stamens are imperfect, and no seeds are formed; nevertheless, the fruit swells and ripens. Under favorable circumstances, a fig or two is formed along the shoots at the base of almost every leaf. Of these, the quantity that sometimes attains maturity is enormous; but frequently, from vicissitudes of cold in some climates and heat in others, much of the fruit drops prematurely. It may not do so at the time when dryness prevails, but at some future period, when moisture is sufficiently abundant; in fact, the injury caused by drought to this fruit becomes most apparent after moisture has started the tree into vigorous growth; and hence the true, but remote, cause of failure in the crop is apt to be overlooked. And if this

be sometimes the case now, it was much more likely to be generally so in former times, when there was among cultivators but little intelligence as regards tracing effects to their causes.

Accordingly, to prevent the fruit of the fig-tree from dropping prematurely, and to hasten its ripening, the process of caprification was resorted to. This consisted in placing the fruit of a wild sort, called the Caprifig, amongst the cultivated ones. An insect of the gnat family infests the former, which it leaves to attack the latter, entering to the interior of the fruit by the orifice. This is a very ancient practice, for it is mentioned by the earliest Greek writers on natural history. It appears to have originated in Greece. Pliny, whose works on such subjects are still standard authority, remarks that it was only used in the islands of the Archipelago; that in his time it was entirely unknown to the Italians, and that there was no tradition of its ever having been introduced to Syria or Palestine. Its utility was doubted by some authors, and, among others, by the celebrated Duhamel. He thought it questionable whether, by caprification, the maturity of the fruit was hastened, except in the same way as apples and pears are when attacked by the grub.

Professor Gasparini, in an essay written for the Royal Academy of Sciences of Naples, details a number of experiments which he had made and repeated in different years. Their results led to the conclusion that caprification is useless for the setting and ripening of the fruit, and instead of making the figs remain on the tree, it causes their fall, especially when the insect has penetrated into the inside and produced decay by its own death. According to Gasparini, the practice of caprification ought to be abolished, as it entails expense and deteriorates the flavor of the figs. The French naturalist, Oliver, says it is being abandoned in some islands of the Archipelago, where it was formerly practiced, but in which excellent figs are still produced.

We have thought it necessary to briefly notice the operation, as so much has been written with regard to its presumed advantageous effects; but, from what has been stated, it will be seen that, according to the investigation of modern science, it is proved to be not only unnecessary, but positively injurious.

Figs have been used in the East as an article of food from time immemorial. They were among the fruits brought back from Canaan by the Israelites sent by Moses to report on the productions of that land. We read of a present having been made to David of two hundred cakes of figs. They were probably used chiefly in the dried state. The drying is easily effected in a warm climate by exposure to the sun's rays, in the same way as grapes are dried, which are called, from that circumstance, raisins of the sun. Like the grape, the substance of the fig abounds in what is termed grape-sugar. In drying, some of this exudes and forms that soft, white powder which we see on the imported dried figs. They are thus preserved in their own sugar and rendered fit for storing up as an article of food.

Figs were considered of such necessity by the Athenians that their exportation from Attica was prohibited. Those who informed against persons violating this law were called "sycophantæ," from two Greek words, signifying the discoverers of figs. These informers appear to have been especially disliked,

for their name gave rise to the term "sycophant," used by designing liars and imposters generally, as well as flatterers.

Only six varieties of figs were known in Italy at this time. Others were introduced from Negropont and Scio, according to Pliny, who gives a catalogue of thirty sorts.

The fig may have been introduced into Britain, along with the vine, by the Romans, or subsequently by the monks; but if it had, it seems to have disappeared till brought from Italy by Cardinal Pole, either when he returned from that country in 1525, or after his second residence abroad, in 1548. In either case, the identical trees which he brought, and which were planted in the garden of the Archiepiscopal palace at Lambeth, have certainly existed for more than three hundred years. This proves that the fig lives to a great age, even under less favorable circumstances than it enjoys in its native country. Another tree, from Aleppo, was planted in the garden of one of the colleges at Oxford, England, in 1648. Having been injured by fire in 1809, the old trunk decayed, and was removed; but fresh shoots sprang up, some of which, in 1819, were 21 feet high. In England, in a country of chalk subsoil and a climate like that near the south coast, the fig is well suited. There the trees grow and bear as standards. They are liable, however, to be killed to the ground in winters of excessive severity, but they spring up afresh from the roots.

The dried figs are obtained in large quantities from Turkey, the Mediterranean, and other countries, but the supply for centuries back has been chiefly from Turkey.

The wood of the fig is soft and spongy, and as it can in consequence be easily charged with oil and emery, it is used in some countries by locksmiths and armorers for polishing.

The fig was introduced into this country by the Spaniards at the time they settled Florida. It is now grown in abundance in nearly all the Southern States, and can be grown successfully by protecting the trees in winter, in the Middle and some of the Northern States.

The fig is a very thrifty tree and requires little attention in its cultivation. It thrives best in rich, mellow soil, well drained, but kept moist by sufficient rain-fall; but it will grow well upon the poorer and drier soils. Sunny locations are the best selections to perfect the fruit. It is propagated from cuttings of the same year's growth, or from sprouts from stool-plants. They make a fine growth during the first season, and begin to bear the year following. In warm climates two crops of fruit are produced from the fig-tree, each crop being produced on distinct sets of shoots. The second crop grows from the eyes or buds of the shoots made in early summer, and if the season be sufficiently long and warm, the fruit will ripen. In such climate it is the second crop that is most prolific and valuable, and that is used in drying for exportation. In climates where the winters are severe, the trees are so trained that the branches can be tied in bundles and laid along the ground, when they are covered with litter and earth. In setting out the plants, it is necessary to give them room according to their size, and they will require little other attention except clean culture. There are few fruit trees, with so little trouble in their

cultivation, that bear so abundantly, or yield so much for so little care, as the fig-tree. The mode of sticking cuttings is to prepare the ground well, make a narrow trench from an inch to an inch and a half deep, and then drive into the ground the cutting to the depth of six or seven inches. The upper part of the cutting is then bent down in the trench and covered with earth to the level of the ground. The top of the cutting, however, must be bent upwards again and made to stand out of the ground. Around the top of the cutting make a small excavation and fill with straw, in order to keep the soil in a good condition of moisture. When planted in this way the cutting will take root promptly and vegetate thriftily, bearing fruit the second year, and sometimes, in favorable situations, the first year. There are many varieties of the fig, and they may be increased either by seed or the method of cuttings. They may also be grafted with a new variety about the time when the sap begins to move.

Very little pruning is required, as the branches and leaves are necessary for protection against heat and cold. The variety known as the "White Fig," imported from France, is sufficiently hardy, with slight protection, to withstand the climate of the Middle States. It is kept low and shrub-like, so that it may be bent to the ground and covered with earth in winter to protect it from frosts.

The best varieties for cultivation, on account of the excellence of the fruit and their adaptability to drying, are those known as the Brunswick, Large White, Ischian, Genoa, Smyrna, and Figue d'Or. The brown fig of Turkey is also a favorite variety.

Turkey and Italy furnish to the world the largest amount of the dried figs of commerce. More than a thousand tons are annually imported into Great Britain. The annual importations into the United States amount to nearly a half million of dollars.

In the countries of the East the dried fig forms an important article of food.

In Morocco, and the regions of Northern Africa bordering upon the Mediterranean, the fruit of the fig-tree and the nut of the almond-tree are compounded into a food, condensed, self-preservative, nutritious, and as simple and healthful as it is cheap and delicious. In the northern regions of Asia and Africa they are used for dessert and for medicinal purposes, being applied to gum-boils and other sores, and also administered in pulmonary and nephritic affections, and to relieve habitual constipation.

All the correspondents of the Department of Agriculture familiar with the cultivation, &c., of the fig-tree in the different Southern States, unite in the statement, drawn from their experience and observation in those States, that the fig-tree is remarkably healthy, free from diseases and the ravages of insects, and that each tree will produce from two to ten bushels of fruit at a crop.

MR. ARTHUR P. FORD, of Charleston, S. C., writes:

A fig-tree in full bearing will produce from six to ten bushels of fruit at a crop, and two crops annually.

MR. JOHN A. CRAIG, of Tallahassee, Fla., writes:

The yield of the fig-tree is most prolific. A few trees will give a large family all they will consume, besides furnishing the poultry and pigs with a considerable portion of their food during the fruiting season.

Col. GEORGE B. CLITHERALL, of Mon Louis Island, Ala., writes :

The fig-tree will yield fruit the second and third year from the cutting, and will bear for forty years or more, yielding from five to ten bushels of figs each season. It is not subject to disease or the ravages of insects ; indeed, we have not a healthier tree in the South.

Mr. A. J. BERCH, of Palatka, Fla., writes :

The fig-tree at six years old, with a sufficient amount of room and suitable soil, will produce on an average from five to six bushels to the tree, and increases to three times that quantity in a few years. There are trees in this country that produce from twenty to thirty bushels of figs a year. I do not know the ages of these trees.

Mr. C. H. REED, of Birmingham, Ala., writes :

The fig is one of the most prolific of all fruit-trees. It commences to bear at two years, and has two crops each season. The average crop is from six to ten bushels from each tree each season. I do not know of any insects or diseases that this tree is subject to in this locality. We dry them here by a simple process. The fruit is gathered when fully ripe, before it becomes soft. It is then placed on trays of wood and put in the sun. Two or three days are sufficient to dry them. Then put them in a hot oven for a few moments, to destroy the vitality of eggs which flies or insects may have laid on them while drying in the sun. They are then packed in layers, with fine white sugar sprinkled on each layer.

Mr. G. W. STONER, of Shreveport, La., says :

The fig-tree when once rooted requires very little attention. The second year it bears fruit, and the yield is increased each succeeding year. A few trees afford all the fruit a family needs, and hogs and poultry fatten on them readily. It is not troubled by disease or insects.

Mr. A. LARGENBUGER, Anaheim, Cal., writes :

I have dried the fruit of the blue fig by placing the same in the sun, turning it every day, and covering it at night to keep the dew off, and had excellent dried figs. I would say that fifty pounds of dried figs could be harvested from a large tree.

Mr. W. W. BRICE, Centerville, Alameda County, Cal., writes :

A fig-tree six or seven years old in this climate will yield one hundred pounds of figs. A full-grown tree is said to yield from two hundred to six hundred pounds.

Mrs. MORRISON ROBBINS, Carrollton, La., writes :

Fig-trees bear at three years old. The average yield of a tree from five to fifteen years old is about three bushels each season. We have not found any insect that injures fig-trees. They are hardy and healthy.

Mr. H. M. STRINGFELLOW, Galveston, Tex., writes :

The fig seems to enjoy almost perfect immunity from all insect depredations, their only enemy being birds, and they bear so abundantly that even the birds cannot do much damage. In fact this fruit succeeds so perfectly all over the State, and is grown so easily, that it has no market-value in its green or fresh state. I see no reason why it should not be dried as profitably in Texas as anywhere else.

Mr. N. B. HARDEN, Marietta, Ga., writes :

The fig bears two crops a year here. The first crop ripens in June, the second in September. I suppose an ordinary tree six or seven years old will produce five or six bushels of fruit annually. I have seen large old trees bear double, perhaps thribble, that quantity.

Mr. JOSEPH SEXTON, Santa Barbara, Cal., writes :

The fig grows remarkably well here and is very prolific. A tree ten years old will measure about one foot in diameter, and will yield about eight hundred pounds of fruit a year.

Mr. B. MATHERS, Fayetteville, Tex., writes :

All varieties of the fig grow well here. A tree well rooted will bear the first year. They are very healthy and prolific.

Dr. H. M. STUART, Beaufort, S. C., writes :

Fig-trees attain a large size and are long lived in this climate. There are celestial fig-trees in this place which have been bearing fruit for more than forty years, and they bear very large crops. The fig does well on almost any quality of good land.

Mr. W. M. SUMNER, Pomaria, S. C., writes :

The fig will commence bearing the second year, and when five or six years old will produce from one to three bushels of fruit. We dry figs by making a thin sirup of sugar and heating this and immersing the figs for a moment. Strain through a collender and roll in dry starch, then dry in sun. This is done at little cost, and makes a dried fig superior to the fig of commerce.

Mr. LEON ARCHIUS, Helena, Ark., writes :

The fig begins to bear the second year, but the yield is not very great until the tree is five or six years old, when the yield will average a peck to each tree every day for a month or more.

Mr. W. A. WHITFIELD, Bay Saint Louis, Miss., writes :

The young plants begin almost immediately to bear. I have gathered ripe figs in August from cuttings planted the previous January. There are two crops in each year. The yield is very large. In this climate the tree is without an enemy. Thousands of dollars could be saved the country by a little enterprise in economizing the wasted figs in drying them.

Mr. P. J. BERCKMANS, Augusta, Ga., extensively engaged in fruit-culture, writes as follows in regard to the process of drying figs, as practiced in that State :

I give herewith a method for drying which was quite successful with us several years since, but now that improved apparatus for drying are easy to be had, figs can be dried with comparative facility. Gather the figs when the skin begins to crack (this is a sign of maturity, and then the fruit contains the largest amount of saccharine matter). Make a strong lye of oak ashes, or take common cooking soda dissolved in hot water. Dip the figs in the hot liquid, only leaving them in this for a few seconds; expose immediately to the air for a minute or two, and repeat the dipping a second time. If the lye is hot and strong enough the color of the fig will immediately change, the dark-skinned varieties to a dark green, and the light-colored varieties to a pale green. The object of dipping the fresh figs in hot lye or a solution of bicarbonate of soda is to kill the milky juice and thus hasten the drying. A small basket loosely made so as to allow the liquid to come freely in contact with the fruit is always desirable to be used for dipping. Place the figs upon trays made of wooden slats, and expose to full sun, taking the fruit under cover at evening, as it will spoil if dews fall upon it. The fruit must be turned in the sun every day, and in three to four days will be ready to put away in small wooden boxes, first putting a layer of spice-laurel leaves (*Laurus notilis*) at the bottom and covering the top with another layer of these leaves. Place the lid on tight to keep insects out, and keep in a dry room. If a brick oven is convenient it will facilitate the work and hasten the drying, but care must be taken not to give it too much heat. If the fruit secretes sirup it has been put under too high a degree of heat, and the result will be an inferior article. After the fruit is partially dried it should be lightly pressed with the hand so as to flatten it. Light-colored varieties are preferred for drying, as they are usually of more attractive appearance when placed in boxes, but the Celestial and Brown Turkey are much richer in quality, although presenting a darker and less attractive appearance. The Celestial dries the most readily of all our varieties, but makes the least valuable article as regards quality. The Brunswick, being very large, seldom gives good results with ordinary means, but will doubtless be easily managed with improved drying apparatus.

Through the courtesy of the Department of State this department has been placed in possession of valuable information in regard to the culture, &c., of the fig in those countries where it is grown and the fruit prepared for commerce.

The Hon. JOHN MEREDITH REED, United States minister at Athens, Greece, writes to this department as follows :

In reply to your communication of the 10th of December last, I have the pleasure to inclose the translation of a statement concerning the method of drying figs in Greece, which I derived from large fig cultivators and exporters. Figs to the amount of about \$500,000 are annually exported, principally to Austria.

Translation of statement on the method of drying figs in Greece.—The gathering of the figs commences about the 5th of August of each year. The ripe ones are cut from the stem by a reed, split at one end. The gathering continues for several days, as only the ripe ones are cut. After the figs are cut they are placed in a line, with great care, upon the ground to be dried by the sun's rays. The soil upon which they are put is divided into oblong sections 39 inches in width. At each side of every section there is a ditch to receive the occasional rain that may fall. On this account also the surface of each of the sections is higher in the middle and declines slightly toward either side. The sections, before the figs are put upon them, are strewn with a very fine kind of grass, upon which the figs are placed. After the figs are put in line upon the grass, as above described, and they have remained exposed for about four days, they become dry on one side, and they are then turned with care to the other side. At least eight days are required for drying figs properly. When they are thoroughly dry they are strung upon rushes to the number of fifty or sixty each, and are placed in boxes. They are sometimes, but very seldom, put into boxes without this arrangement.

In the islands of the *Ægean* Sea figs are dried in ovens.

The United States consul at Smyrna furnishes the following information in regard to the culture and preparation of the fig in Turkey :

Cultivation of the fig in Turkey.—Climate.—The Aidin district is the only one which produces figs for exportation. The fruit will grow anywhere in the neighborhood of Smyrna, of a good quality for consumption in a green state; but the Aidin plain is unique in its climate and soil as being favorable for the proper curing of the fig. The thermometer seldom falls below three or four degrees under freezing-point, and in the summer seldom rises above one hundred and thirty Fahrenheit in the sun.

In Aidin the winters are generally wet, the dry weather commencing in May and continuing to the end of October. Any rain the end of July or during the months of August and September, when the fruit is under the process of drying, injures the quality by causing it to burst, hardens the skin, gives the fig a dark color, and spoils its keeping quality. Heavy dews will cause the same evils. What is required during the time the fruit is coming to maturity is fine weather and dry winds.

Soil.—The fig-tree will grow in almost any soil. It grows very luxuriantly, however, in a rich, heavy soil. But to produce figs that will dry well and please the merchant the soil ought to be of a good depth and of a rich, light, sandy nature. This latter, if the weather is favorable, will produce large figs of a white, thin skin, and of the finest quality.

Preparation of soil.—Before planting, the ground ought to be well plowed two or three times to a good depth, well fertilized, and freed from all weeds and extraneous roots.

Cultivation.—The fig is propagated from slips, selected with as many fruity buds as possible. To form a tree, two slips are planted, one foot apart, and then joined at the top. The trees, if planted in rich soil, should be placed about 30 feet apart, and for poor soil about 25 feet distant from each other.

Rule.—The cuttings are to be planted in the month of March, two in each hole, at about 9 or 12 inches apart at the root end, and gradually bring the top buds to meet, and just cross them, thus, X; then tread in the earth well. The cuttings must be full of buds or eyes, and when about to plant cut the root end off at the first knot, care being taken not to have any of the pulp showing, as it will then be liable to be attacked by worms, which will make the tree hollow and sickly. The entire cutting is put into the ground to within one or two inches of the top; the process of crossing must then take place. Afterwards the ground must be well trodden in, to one or two inches of the top, then cover the remainder (say the one or two inches) over with loose earth, which will protect the ends from the heat of the sun. When

the trees arrive to about the height of a man, nip or cut off the tops to one uniform height, and this will cause the tree to branch out.

During the growth of the trees, the ground ought to be plowed up two or three times during the winter or spring, and the space between them may be used to cultivate cotton, sesame, or Indian corn. When the trees are large the same system of plowing and loosening the earth all around the trees ought to be continued. To make a fig-tree grow well the plowing of the garden is very essential, and if this is not attended to the fruit will be small and in every way inferior. The first year of planting, the cuttings ought to be watered during the summer months.

Application of the male fig.—About the middle of June the male fruit contains a large number of small flies, and is thrown on the female trees. These flies then get distributed over the fruit and convey the necessary amount of pollen. The system is as follows:

When the female fig (first crop) is about the size of a hazel-nut, five or six of the male figs are strung on to a piece of string and one or two of these bunches are thrown on to the female tree, according to its size and amount of fruit. Repeat the operation when the second crop is about the same size. As the tree grows larger year by year, increase the number of strings; but never put more than six strings (say about thirty male figs) over the largest tree at one time. These strings are put on the tree about one hour before sunrise, and care must be taken that the weather is fine and no wind blowing. I may mention that if the male fig is not applied the crop will not set, but the fruit will fall off, and if too many are applied the fruit will likewise fall or become very small and inferior.

Curing.—About the end of July the first figs come to maturity. The fig harvest lasts about six weeks. When the fig is ripe it will, of its own accord, fall from the tree only partly cured. Women and children are employed to pick up the fruit into small baskets to be conveyed to a place in the garden well exposed to the sun, where they are spread on a bed of dry grass, or matting, singly, that is to say, not one on the top of the other, and are turned every day, so as to get every side of the fig exposed to the sun. After a few days of exposure to the sun, those figs which are considered sufficiently dry are selected from the mass and divided into first, second, and third quality. Care must be taken not to dry them too much. The skin ought to feel dry, but the inside soft. Practice alone can teach to what extent the drying ought to take place. The grower then sends the figs to Smyrna, where they are assorted and packed for shipment.

On arrival at Smyrna they are conveyed to the fig bazaar or market place, where early each morning the merchants betake themselves to effect purchases. The parcels belonging to each individual owner are separately examined, each purchaser giving his own price. A broker is nearly always employed as an intermediary by the merchant, on the payment to him of 2 per cent. of the value, this amount being ultimately refunded by the seller. The seller is but seldom the owner himself, this latter being generally represented by a Jew or Armenian merchant, at an exorbitant charge of 7 per cent. as a commission.

The figs are now conveyed to the packing-establishment to undergo manipulation and boxing. The sacks are emptied out on the floor in a square heap, and on all sides are squatted rows of women and girls employed in merely twisting round each fig two or three times between the forefinger and thumb, to render it soft and give it its required oblong form. On the heap are a row of low baskets, into which are thrown separately the first and second qualities to be used for packing. At least 10 per cent. of the whole mass is worthless for boxing, and during the above process the inferior fruit is picked out and thrown in a separate heap. Undersized, tough, or spotted figs, and such as are burst, come under this category, and are packed, or rather pressed promiscuously, in small boxes and labeled, "Figs for family use." Sometimes, when the parcel is unusually good, three qualities are selected instead of two.

From this compartment the baskets are now conveyed to another, and laid on long benches, at which are seated the practiced packers. Each man has a box before him, and swiftly and dexterously are the figs placed alongside each other in rows. The rows vary in number according to the depth of the box, the flat ones, which are in more general use, requiring but two. This mode of packing is called "pulled." Above all, a row of "layers" is then placed to show the figs to advantage. The "layers" are stretched out by means of both hands and laid flat, side by side, in parallel rows. Of late years "layers" throughout the

boxes have come into great demand, and nearly all the best qualities are packed in this way. In packing, the fingers are now and then dipped into a bucket of sea-water to ease their working. The figs become thus moistened with salt-water, which, it is pretended, hastens their sugaring. The boxes are again passed on to the women, who complete the process by placing laurel leaves between the upper rows, before the final nailing down and polishing off by the carpenter. By following this method the fig is so stretched out that it opens at the end, but that part is concealed from view by being turned underneath. When treated in this way the air enters into the fig, and in a short time renders it dry and unpalatable, compared with fruit treated as "pulled," so that, while giving the fig a better appearance, it destroys its juiciness and flavor. The foreign market is in fault here, and not the Smyrna packers, who must suit the tastes of their customers.

The packages used are of various dimensions and forms. At one time all this fruit exported to the United States was placed in drums or paper boxes, but of late years flat wooden boxes are being extensively shipped. Very few drums, if any, find their way to the English market, to which the best qualities are usually sent. America consumes but little of the superior qualities, though the demand for such has now increased. Small canvas bags are now being used with success, and, in fact, every season some novelty in the style of package may be noticed.

The refuse, or "naturals," are put into large boxes or barrels, and are shipped to England, Egypt, and European Turkey. The high rate of duty in America excludes these inferior figs altogether from her markets.

The United States consul at Beirut, Syria, writes as follows of the preparation of figs:

There are several kinds of figs produced here, of which the white, or sugary fig, is considered the best to be dried, as it contains the most saccharine matter. The other kinds are consumed fresh during the season. The white figs are allowed to become fully ripe upon the trees before they are gathered by hand.

The gathering usually takes place during the latter half of August along the coast, and in September in the mountains. Dry and clear weather is chosen. When gathered, the figs are spread upon the flat tops of houses or in inclosures, upon mats made of cane or grass, and exposed to the sun for seven or eight days. They are then put together and separately pressed between the thumb and fingers, and again spread upon the mats and placed in the sun for two or three days. Great care should be taken to keep them from dirt, dust, &c.

When sufficiently dried as above, the figs are placed in grass baskets and held over caldrons of boiling water until they perspire, as it is called. The fig is peculiarly liable to become moth or worm eaten, and the object in exposing it to the effects of steam is to kill any animal germs that it may contain. This is the most delicate part of the whole process of preparation, and requires some tact and experience, as too great exposure to steam would deprive it of more or less of its saccharine matter, and an insufficient exposure would not prevent its becoming worm-eaten.

Lastly, the fruit is again aired in the sun and dried, and packed, with slight pressure, in boxes or baskets, and kept as much as possible from the air until opened for winter-use.

Dried figs and raisins form an important element of the food of most of the people of this country, as they are too poor to buy sugar, and a very large proportion of them use little or no animal food.

The United States consul at Cadiz, Spain, writes as follows:

I have the honor to inclose you the directions for drying figs, requested in your dispatch of December 10, 1877.

Directions for drying figs.—The figs must be ripe, indeed, past maturity; then they must be put on dry boards separated from each other so that there is no contact whatever. This process must be continued for six or seven days, taking care always that the figs be not exposed to moisture or dampness. When this process is ended they must be put in the frails or boxes and pressed. There is no necessity of turning them over as in the case of raisins or other fruit. The process is very simple, and no other labor is necessary than that described above.

The United States consul at Messina, Italy, writes as follows :

In reply to your letter of 12th December last, asking information in regard to the drying and preparing the native figs for market, I have to inform you that the method employed by the peasantry is very primitive and crude. It is as follows :

When ripe the fruit is halved, but not entirely separated at the stalk, spread open and laid upon mats woven from cane. These mats are in most cases placed upon a light frame-work, some four or five feet above the ground, and in a position to have the rays of the sun all the day. In this climate the fruit is considered sufficiently cured in eight or ten days' exposure. The mats are taken in after sunset and care is taken that no moisture affects them. When perfectly dry, the figs are placed upon two sharpened sticks of split cane of about one foot in length, by pushing the sticks through each half. They are then placed upon the market for sale.

Very small quantities are sent from this port to America or elsewhere, nearly all the crop being consumed here.

THE DATE PALM.

The Date Palm is a hardy tree, as are all the species of palms, and flourishes throughout an immense space in the countries where it is grown, embracing a wide area, lying between and running from 12° to 57° of north latitude.

It has been introduced successfully into Southern Europe, and thrifty specimens may be seen growing in England, without apparent injury from the rigor of that climate. There are fine specimens of this valuable tree in the gardens at Saint Augustine and at Key West, Florida, and in Louisiana, near New Orleans, in vigorous growth, and perfecting their fruit, which is evidence that this palm will grow elsewhere in the United States in latitudes and conditions of climate, similar to those of its native countries.

Contributing, as it does, to many of the essential wants of man, it is not only one of the most useful, but also one of the most picturesque and beautiful trees in the vegetable kingdom.

The Date Palm, according to botanists *Phoenix dactylifera*, is cultivated in immense quantities all over the northern part of Africa, and more sparingly in Western Asia and Southern Europe; and in some of these countries its fruit, though only known to us as an article of luxury, affords the principal food of a large proportion of inhabitants, and likewise of the various domestic animals—horses, dogs, sheep, cows, and camels being alike partial to it.

The tree usually grows about 60 or 80 feet high, and lives to a great age, trees of from one hundred to two hundred years old continuing to produce their annual crop of dates. Numerous varieties are recognized by the Arabs, and are distinguished by different names, according to their shape, size, quality, and time of ripening. The fruit, however, is not the most valuable part of this widely dispersed tree, for, as with the cocoa-nut tree in its native country, nearly every part is applied to some useful purpose. Bags, mats, couches, brushes, and the huts of the poorer classes are constructed of its leaves. The fiber surrounding the bases of their stalks is used for making ropes and coarse cloths, the stalks themselves for crates, baskets, brooms, walking-sticks, &c., and the wood for building substantial houses. The heart of young leaves is eaten as a vegetable. The sap affords an intoxicating beverage, though, to obtain it, the tree is often destroyed; and even the hard and apparently useless stones are ground into food for cattle.

The stem of the tree, which is straight and simple, reaches a height of 60 feet, and bears a head of forty to eighty sea-green, feather-shaped leaves, of 8 to 10 feet long. This palm being dioecious, that is, the stamens and pistils, or male and female parts, occurring in the flowers of different trees, the crops fail, or the fruit is unfit for food and worthless if the fertilization is in any way

prevented. To insure this, it was an early custom of the Arabs to hang clusters of male flowers on the trees which bore only the female ones. And thus the Date Palm was one of those trees which led to the knowledge of the sexes of plants.

The fruit grows in clusters, and a tree will bear usually fifteen or twenty clusters, each weighing fifteen or twenty pounds. The fruit is eaten either fresh or dried, and in the latter state becomes an article of commerce. Generally, the fruit may be described as oblong, somewhat the shape of an acorn, but about twice the size, consisting of a thick, fleshy substance, including, and freely separating from, an oblong stone or kernel, having a furrow on the one side. Their taste is agreeably sweet, accompanied with a slight astringency. Chemical analysis has discovered that the fleshy part of the fruit contains fifty-eight per cent. of sugar.

When the dates are allowed to remain on the tree till they are quite ripe, and have become soft and of a high red color, they are formed into a hard, solid paste or cake. This is formed by pressing the ripe dates forcibly into large baskets, each containing about two hundred weight. In this state it is exported, and in the market it is cut out of the basket and sold by the pound. It forms part of the daily food of all classes of people. In traveling, it is dissolved in water and thus affords a sweet and refreshing drink. Cakes of dates, pounded and kneaded together, and so solid as to be cut with a hatchet, are the store of food provided for African caravans on their journey through the Great Desert.

A liquid resembling wine is made from dates by fermentation, and also a kind of vinegar. In Persia an ardent spirit is distilled from dates. The soft pith at the summit of the palm-stem, along with the young leaves not yet unfolded, are eaten under the name of palm-cabbage. From the central pith of the tree a starch of nutritive properties is also made. Many of the inhabitants of Northern Africa use the roasted date stones or seeds as a substitute for coffee. In the Barbary States they make handsome beads for rosaries of these seeds. The seeds are in many places ground for the sake of the oil which is afterward obtained from them by expression, and the refuse is given as food for cattle. As food for cattle, sheep, &c., the seeds of the date, softened by being soaked in water, are considered in the East to be more nutritious than barley.

It is said by travelers that all the refinements of Arabian cookery are exhausted in the preparation of dates, and that a good housewife will daily supply her lord for a month with a dish of dates differently dressed.

In ancient times the Date Palm was held sacred to the sun, and its leaves were used as emblems of authority and glory. They were hence carried before kings and conquerors. The Date, it is written, was probably the Palm which supplied the "branches of palm-trees," mentioned as having been carried by the people who went to meet Christ on his triumphal entry into Jerusalem, and from which Palm Sunday takes its name.

The best dates imported into Great Britain and the United States come from Tunis and Algiers, but they are most commonly brought from Smyrna and Alexandria. The author of "Tropical Agriculture," an English publi-

cation of great merit, says that although the countries where the date flourishes best are characterized by an absence of rain, it will not fruit without its roots are well watered. Hence there is a native proverb that the date must have its head in the fire and its roots in the water, proving the necessity of frequent irrigation.

In Algeria and Tunis the culture of the date occupies a large surface of the land, and is carried on with great care. The fruit is of the finest quality, and its cultivation one of the profitable industries of the country. The best trees are those produced from slipped plants. Those raised from seeds are much longer in arriving at maturity. When the slip, taken from the root of the stem of an adult tree, is first planted, it must be watered daily for five or six weeks, and every other day for the next month. After this the trees are watered once a week in summer and every month in winter. In planting seeds they should be chosen from those fully ripe, having full large eyes, and such as have been gathered from mature trees and from clusters containing few fruits. These, if carefully planted, are said to ensure timely sprouting and steady growth, as well as future luxuriance, longevity, and unremitting fruitfulness. The seeds taken from old trees have small eyes, and the sprouts from such seeds will be thin and weakly. The seeds from very young trees are not good. It is best to plant in alluvial soil, and in situations where they can have sufficient moisture.

In a favorable situation the Date Palm will begin to fruit at six years, and lasts to a hundred years and more.

A date tree in full bearing will produce from two hundred to four hundred pounds of fruit a year.

Although there are so many varieties of the date, differing in size, form, and quality of the fruit, they may be chiefly divided by color into three classes, viz., red, yellow, and whitish.

The dates, after having been gathered, are dried in the sun, and may thus be preserved for about two years.

In Turkey each proprietor has a right to two hours' water in the day from the stream which passes by his grounds, and this right is always specified in the title-deed by which he holds his garden. Before the dates are ripe each family is bound to set apart one tree, all the fruit of which is consecrated to the service of the Mosque and the use of the poor.

From the juice or sap of the tree there is made a fermented wine or liquor of which the natives are very fond. It is produced by simply making an incision in the top of the tree, below the foliage, reaching the center. A tube is fitted, through which the sap flows into a vessel. The palm thus yields about ten quarts every day. The tree is bled every two months, sometimes every day, to prevent the healing of the wound. The operation will kill the tree if continued too long, but cautiously practiced for a few days will often invigorate a sickly or ill-bearing palm.

Sugar and molasses are also made from the sap, and by about the same process as is employed in the Northern States in the manufacture of maple sugar and sirup.

It is estimated that in Egypt there are 4,000,000 Date Palms grown, and the annual production is about 15,000,000 or 20,000,000 cwt., the most of which is locally consumed. In Tunis, according to a recent enumeration, there are about 900,000 date-trees which are subject to a tax by the government. The annual product of these trees is valued at \$2,435,000.

The date-groves of Turkey yield annually from 40,000 to 60,000 tons of dates, in ordinary good seasons.

Burckhardt, in his travels in Arabia, says that the dates form the principal part of the subsistence of the inhabitants of many portions of Arabia and the Barbary States, and they are held in the highest estimation wherever they are met with; that they are by far the most essential article of food for the people. Their harvest is expected with as much anxiety, and attended with as much general rejoicing, as the vintage in the south of Europe.

The chief resource of the inhabitants of the oases of the Sahara is the Date Palm. When every other species of fruit fails, the Date Palm yields with the returning year its nourishing fruit, and often saves the populations of the Great Desert from starvation.

Sufficient experiments have already demonstrated that in two States (Florida and Louisiana), without especial attention to culture or situation, the Date Palm will grow well and thrifily, and perfect its fruit to a degree comparable with the dates of Egypt or Turkey, which is good foundation for the belief that this valuable tree will grow and thrive in other States of like conditions of climate, latitude, &c.

The alluvial lands along the river courses of Southern Alabama, Louisiana, Mississippi, and Texas it is believed will grow the date. Notably the bottom lands of the Tombigbee, the Pearl, the Mississippi, the Sabine, the Brazos, the Nueces, the Colorado, and the Rio Grande Rivers, where there is abundant moisture for the roots and warm sunshine for the stems, and where large tracts of lands, now neglected and unproductive, could be made attractive by the cultivation of the Date Palm, and profitable to the proprietors for long years to come.

Gen. Charles P. Stone, of the general staff of the Egyptian army, Cairo, writes in regard to the date:

I have the honor to acknowledge the receipt of your letter of the 3d instant, informing me of the safe arrival and planting of the red-date seed, &c.

Had I known that you desired to plant the date tree in large numbers, the quantity sent would have been very much greater, and I have now given orders for the collection of several thousand seeds in each of the northern districts, where the best dates are grown. The provinces of Charkyeh, Garbieh, and Dakalieh, as well as the districts of Rosetta, all produce, in their northern portions, excellent varieties of dates, the cultivation of which is very profitable.

From what I have seen of the date-producing regions in this part of the world, and from what I know of the Desert of the Colorado, between Carisa Creek and Fort Yuma, I am inclined to believe that the greater portion of the latter region could be made productive and very valuable by there making plantations of the Date Palm. This tree not only does not require much water, but much water is prejudicial to it; and the climate of the Colorado Desert is singularly similar to that of some of the best date-producing districts here. In any case, I feel assured that all the New River portion of the Colorado Desert would grow the date tree without difficulty.

Of date the 15th February, 1878, General STONE also writes from Cairo, Egypt:

I have the pleasure of sending you, by mail, a small sack of date-seeds, of a choice and hardy variety, called *Amzi*, grown in the province of Charkieh, latitude about thirty-one degrees north, where, during the winter, the cold is sometimes quite sensible.

I am told that it is best to plant the seeds with the grooves down. I am also informed by those acquainted with the culture that one is not sure to produce from the seed the same quality of date as that planted, in size, flavor, &c., but, on the contrary, the product is usually inferior, while sometimes, but rarely, superior. When a date cultivator finds that a certain tree yields a remarkably good fruit, he is careful to preserve and transplant all the shoots of that tree which come from its roots, being sure that in those shoots he will have the same quality of fruit.

I propose to send you, by the next mail, a quantity of seed of another variety, also choice and hardy, from the coast between Rosetta and Damietta.

I suppose that you are aware that to have a good crop and good fruit it is necessary to mix, by hand, the pollen of the flowers of the male tree with that of the female.

Mr. J. R. SCUPHAM, assistant engineer of the Central Pacific Railroad, writes from San Francisco, and says:

I notice, through the public journals, that you are taking an interest in date-culture in California. I have been making some experiments in that line. For two years we have been planting various species of Eucalypti and Acaciæ along the right of way, and on odd sections throughout the State. I have been experimenting to get a tree that will stand the heat and drought of the Mojave and Colorado Deserts. Among others, I have tried the Date Palm (*Phœnix dactylifera*), and find that it will stand the slight frost to which the desert is subject, even better than the Eucalypti. To get my specimens, I simply took the seed from the dried dates of commerce, and find that they will grow very well. I intend to experiment further with them, in the vicinity of Yuma, this coming season.

